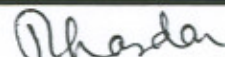
	<b>PLANT PURCHASING SPECIFICATION BHOPAL</b>	BP 22996 REV NO. 03 PAGE 1 OF 3
<b><u>POLYIMIDE FILM (TEMP.INDEX 220)</u></b>		SUPERSEDES BP22996 Rev.02
<p>1. <b>GENERAL:</b></p> <p>This specification governs the quality of polyimide film made by drawing or extrusion process. Polyimide polymer make up is the result of a poly-condensation reaction between pyromellitic dianhydride and 4,4-diaminodiphenylether. The film has very good mechanical, electrical and dimensional stability properties, low water absorption, highly resistant to dilute acids, alkalies, oils and greases, alcohols and hydrocarbons. The material has a temperature index of at least 220.</p> <p>2. <b>APPLICATION:</b></p> <p>Used as insulation in coils of, class H insulated Traction Machines.</p> <p>3. <b>COMPLIANCE WITH NATIONAL STANDARDS:</b></p> <p>There is no Indian Standard covering this type of material.</p> <p>4. <b>DIMENSIONS AND TOLERANCES:</b></p> <p>4.1 <b>Sizes:</b> Thickness x width x length of the film shall be stated on the order.</p> <p>4.2 <b>Thickness:</b></p> <p>4.2.1 <b>Preferred Thickness:</b></p> <p>25,50,75 microns, with a Tolerance of <math>\pm 5\%</math>.</p> <p>4.3 <b>Preferred Width and Tolerance:</b></p> <p>15, 25 mm with a tolerance of <math>\pm 0.5</math> mm.</p> <p>However any other width can also be ordered</p> <p>5. <b>FINISH:</b></p> <p>Shall be clean, free from blisters, blow holes, folds, corrugation and wrinkles. Optical properties shall be consistent from lot to lot. Film shall contain no foreign particles.</p> <p>6. <b>TEST METHODS:</b> As stated against each clause.</p>		
Revision : Reviewed & Brought upto-date		ISSUED by :  STANDARDS AND MATERIALS GROUP TECHNICAL SERVICES DEPARTMENT
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### 7. SAMPLE FOR TEST:

5 Sq. metre in roll form of ordered thickness from the same batch shall be supplied for testing and approval purposes.

### 8. PHYSICAL PROPERTIES:

8.1 Density at  $25 \pm 2^\circ\text{C}$ . 1.42  $\pm$  0.05 gm/cc.

8.2 Water absorption after  $24 \pm 1$  hr immersion at Room Temp : 1.0%, Max.  
( On sample of 3 sheets of 200x200mm )

### 9. THERMAL PROPERTIES:

9.1 Shrinkage after  $24 \pm 1$  hour at  $250^\circ\text{C}$ . in each direction: 0.2% Max.

( Tested on sample of length 275 x 215 mm.)

### 10. MECHANICAL PROPERTIES:

10.1 Tensile Strength, in each direction: (IS:7809 Part 2) : 160 n/mm<sup>2</sup>

10.2 Elongation at Break, in each direction (IS:7809 Part 2) :

25 Micron Thk : 40%, Min.

50 Micron Thk : 45%, Min.

75 Micron Thk : 50%, Min.

Tensile strength and Elongation test shall be carried out on tensile testing machine with a uniform rate of Jaw separation of 100mm per minute and gauge length of 100 mm.

### 11. ELECTRICAL PROPERTIES:

11.1 Electric Strength (BDV) at Room Temp. (IS:2584)

Thickness (Micron)	B.D.V.(Volt/Micron), Min.
25	230
50	180
75	160

11.2 Volume Resistivity at 200 deg.C (ASTM D-257):  $1 \times 10^{12}$  Ohm-cm, Min.





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### 12. CHEMICAL PROPERTIES:

#### 12.1 Identification of Material:

The material shall be polyimide film when identified by Infra Red Spectrophotometer or by any other conventional method.

### 13. TEST CERTIFICATE:

Unless otherwise specified, three copies of test certificate shall be supplied with each consignment.

In addition, the supplier shall ensure to enclose one copy of the test certificate alongwith their despatch document to facilitate quick clearance of the material.

The test certificate shall bear the following information:

BP 22996 : Polyimide Film - Temp. Index 220.  
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BHEL Order No.

Batch No.

Date of Manufacture.

Test values obtained for Physical, Mechanical, Thermal and Electrical Properties and the dimensional tolerances as per the specification.

### 14. PACKING AND MARKING:

Rolls shall be suitably packed to prevent damage during transit and storage.

BP 22996 : Polyimide Film - Temp. Index 220.

BHEL Order No.

Manufacturer's and/or Supplier's Name and Grade.

Batch No/Lot No.

Thickness, Width and Length.

Net weight.

Test certificate reference.